



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,667	02/18/2004	Joseph H. Kang	29250-001092/US	8528
<div>7590 08/24/2007 HARNESS, DICKEY & PIERCE, P.L.C. P.O. Box 8910 Reston, VA 20195</div>			<div>EXAMINER TRAN, TUAN A</div>	
			<div>ART UNIT 2618</div>	<div>PAPER NUMBER</div>
			<div>MAIL DATE 08/24/2007</div>	<div>DELIVERY MODE PAPER</div>

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/779,667

Applicant(s)

KANG ET AL.

Examiner

Tuan A. Tran

Art Unit

2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-3, 8-10 and 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Meredith (6,310,579).

Regarding claim 13, Meredith discloses an apparatus for determining an indication of return loss of an antenna of a wireless communication system (See fig. 2), comprising: a tone generator 137 generating a test signal; a coupler 112 injecting the test signal into a conductor towards the antenna 110; and communication equipment, connected to the antenna via the conductor, measuring, across a frequency band, at least powers of a signal received at a base station from the antenna, the received signal including a leakage signal and a reflected signal, the reflected signal being a reflected portion of the test signal and the leakage signal being a portion of the test signal leaking from the coupler away from the antenna to the communication equipment; determining maximum and minimum powers 201, 207 of the received signal based on output of the measuring; and determining at least an indication of return loss of the antenna based on the determined maximum and minimum powers 201, 207, wherein the leakage signal is determined from an average sum of the absolute maximum powers (positive amplitude

values) and the absolute minimum powers (positive amplitude values), and the reflected signal is determined from an average difference of the absolute maximum powers and the absolute minimum powers (See figs. 2-3 and col. 3 line 30 to col. 6 line 55).

Claim 1 is rejected for the same reasons as set forth in claim 13, as method.

Regarding claim 14, Meredith discloses as cited in claim 13. Meredith further discloses the communication equipment is a receiver of the base station (See fig. 2 and col. 2 lines 59-62).

Regarding claim 2, Meredith discloses as cited in claim 1. Meredith further discloses the measuring step samples the received signal at a fixed interval in at least measuring the power (See col. 4 lines 47-49).

Regarding claim 3, Meredith discloses as cited in claim 1. Meredith further discloses the measuring step measures the powers of the received signal in the frequency domain; and the second determining step determines an average voltage of the reflected signal based on the determined maximum and minimum powers of the received signal, and determines an indication of the return loss from the determined average voltage of the reflected signal (See fig. 3 and col. 4 line 58 to col. 5 line 14).

Regarding claims 8-10, Meredith discloses as cited in claim 1. Meredith further discloses the first determining step estimates at least one of the maximum and minimum powers using an estimated waveform derived from an estimated value representing periodicity of the received signal using the output of the measuring step (See fig. 3 and col. 4 line 58 to col. 5 line 14, col. 5 line 59 to col. 6 line 20).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 4-7 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meredith (6,310,579).

Regarding claims 4 and 6, Meredith discloses as cited in claim 3. However, Meredith does not mention that the return loss is computed from the time domain power of the reflected signal derived from the determined average voltage of the reflected signal. Since Meredith does suggest that the return loss is computed from the determined average voltage of the reflected signal derived from the determined frequency domain power of the reflected signal (See col. 5 lines 2-14) and the relationships between time and frequency ($f=1/t$) and between voltage and power ($P=V^2/R$) are known in the art; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to compute the return loss from the time domain power of the reflected signal derived from the determined average voltage of the reflected signal for the advantage of providing flexibility to the tester in computing the return loss.

Regarding claim 5, Meredith discloses as cited in claim 4. Meredith further discloses the step of judging whether the antenna is satisfactory connected to the base

Art Unit: 2618

station when the time domain power of the reflected signal exceeds a threshold power (See col. 6 lines 21-41).

Regarding claims 7 and 11-12, Meredith discloses as cited in claims 1 and 6. However, Meredith does not explicitly mention the step of judging whether the antenna is satisfactory connected to the base station when the return loss exceeds a threshold and the step of issuing an alarm when the antenna is not satisfactory connected to the base station. Since Meredith does suggest that the return loss is computed for the purpose of evaluating and providing accurate indication of the performance of the antenna of the base station (See col. 2 lines 40-62); therefore, it should be necessary to compare the computed return loss to a reference value (threshold) in order to determine the level of the performance (good, fair or bad) of the antenna as well as to issue an indication of the determined performance in order to meet goal of the testing process.

Response to Arguments

Applicant's arguments filed 05/22/2007 have been fully considered but they are not persuasive.

The applicant argued that Meredith does not teach that the leakage signal is determined from an average sum of the absolute maximum powers and the absolute minimum powers, and the reflected signal is determined from an average difference of the absolute maximum powers and the absolute minimum powers (see Remark, page 8). The examiner respectfully disagrees with the applicant's argument because Meredith does teach such limitations. In this instant case, Meredith shows the leakage signal 201 is approximately equals an average sum of the absolute maximum powers

Art Unit: 2618

(positive amplitude values) and the absolute minimum powers (positive amplitude values) representing by leakage signal $= (P_{\max} + P_{\min})/2$ (See fig. 3 and col. 6 lines 17-18), and the reflected signal $= P_{\max} - \text{leakage signal} = P_{\max} - \{(P_{\max} + P_{\min})/2\} = (P_{\max} - P_{\min})/2$ or equals an average difference of the absolute maximum powers and the absolute minimum powers (See fig. 3 and col. 6 lines 19-20). For that reason, the rejections are proper and maintained.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan A. Tran whose telephone number is (571) 272-7858. The examiner can normally be reached on Mon-Fri, 10:00AM-6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Anderson can be reached on (571) 272-4177. The fax phone

Art Unit: 2618

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Tuan Tran
AU 2618